

REMARKS

Reconsideration of the application is respectfully requested in light of the remarks set forth below.

I. Status of the Claims

Claims 1, 5-7, 9, and 12-18 are presently pending. Claims 2-4, 8, 10, and 11 have previously been canceled without prejudice or disclaimer. Claims 5-7, and 12-16 are canceled without prejudice or disclaimer.

Claims 1 and 9 are amended to recite a lubricant comprising zinc stearate. Claims 17 and 18 are amended to set an endpoint of the limitation of iron loss, and rewrite these claims in independent form. Applicants add new claims 19 and 20 to recite a lubricant comprising zinc stearate. No new matter is added. Support for the amendments may be found, for example, in the substitute specification at page 20, line 16 through page 27, line 21 and at page 29, line 6 through page 31, line 9.

II. Rejections under 35 U.S.C. § 112

Claims 17 and 18 are rejected under 35 U.S.C. § 112 as failing to comply with the written description requirement. The Examiner asserts that the endpoint of the claimed iron loss of less than 200W/kg does not find support in any part of the specification. Applicants amend claims 17 and 18 to set an endpoint of the limitation of iron loss as less than or equal to 194W/kg. Applicants submit that Table 1 shows that iron loss of less than or equal to 194 W/kg is achieved when the proportion and mean particle size of the lubricant are kept within the claimed ranges.

Given the foregoing, claims 17 and 18 satisfy with the written description requirement. Applicants respectfully request therefore that the rejection under 35 USC § 112 be withdrawn.

III. Rejections under 35 U.S.C. § 103(a)

Claims 1, 5-6, 9, 12-13, 15 and 16 remain rejected under U.S.C. §103(a) as being obvious over U.S. Patent No. 6,372,348 to Hanejko et al. ("Hanejko")¹ in view of U.S. Patent No. 6,162,836 to Kato ("Kato"). According to the Examiner, it would have been obvious to one of ordinary skill in the art to use the particle sizes disclosed in Kato in the composition of Hanejko. Claims 7 and 14 remain rejected under U.S.C. §103(a) as being obvious over Hanejko in view of Kato and further in view of Rutz in U.S. Patent No. 5306524 ("Rutz 2").

The rejections of claims 5-6, 12-13, 15 and 16 are moot since these claims have been canceled. The rejection of claims 1 and 9 under U.S.C. §103(a) are respectfully traversed.

In the Final Office Action, the Examiner cites Hanejko as teaching an iron powder composition which can be mixed with a lubricant (e.g., zinc stearate) in an amount of up to 1 wt% of the composite particle. The Examiner acknowledges that Hanejko is silent as to the particle size of zinc stearate. The Examiner cites Kato as teaching zinc stearate with an average particle size of between 1 and 2 microns.

The Examiner asserts that Applicants' last arguments regarding the unexpected results, criticality, and optimization of the Applicants' claimed ranges are applicable only where the lubricant component is zinc stearate. *See* p. 7 of the Final Office Action dated January 13, 2010. The Examiner also notes that if the claims were so limited to zinc stearate, Applicants arguments would be found convincing and the rejection would be withdrawn.

Without conceding the validity of the Examiner's assertions and in the interests of prosecution efficiency, claims 1 and 9 have been amended to recite a lubricant comprising zinc stearate. As amended, Applicants submit that the claimed invention is not obvious in view of the cited references at least in part due to the unexpected results achieved by the claimed composition

¹ Although the Examiner attributes this reference to Rutz, we believe according to the cited patent number that he intended to make reference to Hanejko et al.

as set forth in the Declaration of Toru Maeda pursuant to 37 C.F.R. §1.132 (“The Maeda Declaration”), which was filed together with Response to Office Action on October 22, 2009 and is attached letter.

For the purpose of responding to the present rejections of claims 1 and 9, Applicants respectfully highlight arguments made in the Response of October 22, 2009 below to again demonstrate why these rejections should be withdrawn.

As amended, claims 1 and 9 claim a lubricant comprising zinc stearate, requiring the lubricant to be added in a proportion of at least 0.001 percent by mass and no more than 0.01 percent by mass relative to said plurality of composite magnetic particles, and to have a mean particle diameter of no more than 2.0 microns.

Hanejko teaches broad genus of lubricants that may be added in amounts of up to 1.0 mass% relative to the particles. This upper range disclosed by Hanejko is 100-fold higher than the upper limit of the claimed 0.001% to 0.01% range. Furthermore, Hanejko and Kato do not teach or suggest the relationship discovered by Applicants between iron loss and the proportion and particle size of the lubricant.

Applicants point out once again that the reduced level of iron loss achieved by the claimed invention represents “new and unexpected results relative to the prior art”, and resulting from the inclusion of a lubricant comprising zinc stearate within the claimed proportioned range and claimed mean particle size this reduction, as described for example at page 30, line 2 through page 30, line 6 of Applicants’ substitute specification:

If the amount of the zinc stearate used as lubricating powder added is too small, the advantage provided by the addition of the zinc stearate will be inadequate, leading to the destruction of the phosphate coating serving as the insulative coating 20 during compacting. Also, flowability between particles is reduced, leading to increased distortion being introduced into the iron particles during compacting. It is believed that eddy current loss and hysteresis loss increase for these reasons, leading to

increased iron loss. If the amount of zinc stearate added is too high, there is an increased amount of the non-magnetic layer between iron particles. This is believed to generate demagnetizing fields between iron particles, leading to increased iron loss.

Also, if the particle size of the zinc stearate is small, the zinc stearate can be distributed uniformly and thinly on the surface of the iron particles, maximizing the lubrication effect. If the particle size of the zinc stearate is large, the probability of its presence between iron particles is less even if the amount added is the same. Thus, the lubrication effect obtained during compacting is reduced. Thus, in this example, powder magnetic core iron loss appears to be reduced when the mean particle diameter zinc stearate is no more than 2.0 microns.

Applicants also submit that Table 1 of Applicants' specification shows that iron loss of less than 194 W/kg is achieved when the proportion and mean particle size of zinc stearate are kept within the claimed ranges.

The Maeda Declaration further explains how a compacted magnetic core can be formed having reduced iron loss when using zinc stearate in the claimed proportion and claimed mean particle diameter range. Furthermore, the Maeda Declaration suggests that iron loss is unexpectedly increased if the lubricating powder of zinc stearate is provided in a greater or lesser amount, as shown in Table 1 of the specification. Applicants respectfully submit that the particular ranges called for in the pending claims are critical to obtain the unexpected reduction in iron loss.

The Maeda Declaration also suggests that a significant amount of experimentation was required to determine the critical range of a zinc stearate in order to achieve low iron loss. As such, Applicants submit that one of ordinary skill in the art would not have readily derived the claimed invention as the result of routine optimization or experimentation.

Hanejko teaches that a lubricant may be added in amounts as large as 1.0 percent by mass relative to the particles, which is an amount that is 100-fold higher than the claimed range allows for. Moreover, Hanejko teaches that use of the lubricant reduces stripping and sliding pressure, but does not teach or suggest that the lubricant may be used to reduce iron loss, or suggest any preferred

ranges to obtain a reduction in iron loss (*See Hanejko* at column 10, lines 55-65). As Hanejko does not suggest that reduced iron loss is a function of features of the lubricant as claimed, Applicants submit that the reduced iron loss cannot be considered to be a known result effective-variable in view of Hanejko (MPEP 2144.05 II. B.).

Kato teaches zinc stearate having average particle sizes between 1 and 2 microns. However, as with Hanejko, Kato provides no teaching or indication that the claimed ranges would have an effect on iron loss reduction as set forth in the Maeda Declaration. Thus, Kato does not cure the deficiencies of Hanejko.

Given the foregoing, claims 1 and 9 are not obvious over Hanejko in view of Kato. Applicants respectfully request that the obviousness rejection of claims 1 and 9 under 35 USC § 103 be withdrawn. As claims 17 and 18 each incorporates one of allowable independent claims 1 and 9 and were not rejected under 35 U.S.C. § 103, Applicants submit that claims 17 and 18 are allowable under 35 USC § 103.

IV. New Claims

Applicants add new claims 19 and 20. As new claims 19 and 20 each depend from one of allowable independent claims 17 and 18, Applicants respectfully submit that new claims 19 and 20 are also allowable for at least this reason.

CONCLUSION

In view of the above amendments and remarks, Applicants believes the pending application is in condition for allowance. If there are any remaining issues which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Application No. 10/599,003
Amendment dated March 2, 2010
After Final Office Action of January 13, 2010

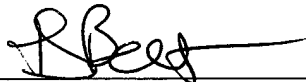
Docket No.: 20239/0204681-US0

The Commissioner is authorized to charge any deficiency or credit any excess in this fee to

Deposit Account No. 04-0100.

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Respectfully submitted,

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